lawyers, statesmen, and others, all celebrated for the fluency of their speech, shows a surprisingly large development of the third frontal convolution of the left hemisphere. The brain of Gambetta is a marked instance of the same fact. Here this convolution is so highly developed that it is actually doubled by a slight fissure in the middle, no trace of this development being found on the right side.

What is above described includes merely what is most surely and definitely known, — a vast field for future research remains open, and even now enigmas are waiting to be answered. That certain aphasic patients are unable to count, and others do so normally; that some can tell time, distinguish the beats, but cannot count; and so on, — are facts as yet without meaning. So, too, the loss of the power to express one's self in gestures, and to use the ordinary conventionalities of life, may some day find a definite cerebral localization. Sometimes only certain kinds of signs are lost, and the rest retained; sometimes the patient can talk only by singing. All these facts may, in the science of the future, be as definitely explored as the main types of aphasia are to-day.

THE PSYCHOLOGY OF HANDWRITING. — In the *North American Review* for January, the editor, Mr. Rice, prints a series of the autographs of Napoleon, written at various epochs in his eventful life. Starting in his earlier years with a bold and clear signature, it retains most of these characteristics in the days of his greatest successes; but parallel with the declining fortunes of the great man, is a degeneration of his autograph, until at the end we have nothing more than the rudest, characterless scrawl. The autographs cannot but suggest the ravaging changes in the nervous system that were the physiological concomitant of the turmoil raging in the hero's mind.

HEALTH MATTERS.

Foot-and-Mouth Disease, and its Relations to Human Scarlatina as a Prophylactic.

AT a recent meeting of the New York Academy of Medicine, Dr. J. W. Stickler of Orange, N.J., read a paper entitled 'Foot-and-Mouth Disease as it affects Man and Animals, and its Relation to Human Scarlatina as a Prophylactic.' He said that it had long been known that foot-and-mouth disease could be communicated from animals to man through the milk of the affected animals, and by the introduction of the virus into wounds. When human beings are the subjects of this disease, the glands become enlarged, vesicles appear in the mouth and upon the hands and feet, and in some cases an eruption which resembles that of scarlet-fever. Hertwig and others, who purposely contracted the disease by drinking infected milk, were affected in this way. In 1884 there was an epidemic of sore throat, together with glandular enlargements and vesicles, in Dover, England. Upon investigation it was shown that it was due to the drinking of milk from animals sick with foot-and-mouth disease. Two years after this, an investigation was made in one hundred and eighty-two of the cases which had suffered from the sore throat in 1884. None of them had since had scarlet-fever, and from other points in their history it appeared that they had been rendered insusceptible to that disease. Dr. Stickler had himself inoculated three children with virus from milch-cows, and subsequently exposed them to scarlet-fever. One of these, after having fully recovered from the inoculation, was taken to the bedside of a scarlet-fever patient, and inhaled the latter's breath, and placed his head upon the pillow of the sick one. The child did not contract the fever. Two other children, similarly inoculated and similarly exposed, have not contracted the disease. In concluding his paper, Dr. Stickler said, that, while it was by no means proven that scarlet-fever could be prevented by such inoculations, the results thus far obtained were very suggestive, and proposed to continue his investigation.

In the discussion which followed the reading of the paper, Professor Law of Cornell University said that he was sceptical as to the prophylactic value of these inoculations against scarlet-fever. In Great Britain there were frequent outbreaks of foot-and-mouth disease, affecting cattle and the persons who came in contact with them, and, if it was a protective disease against scarlet-fever, he thought the latter should be much less prevalent than it was. He had himself been over and over again exposed to foot-and-mouth disease, but had never suffered, while, on the first exposure to scarlet-fever, he contracted it; his system being susceptible to the one, and not to the other. He thought it would be dangerous to investigate this subject very much in the United States, as it would be a very serious matter if the foot-and-mouth disease should be introduced among American cattle. He also feared that scarlet-fever might be more widely disseminated if these inoculations were to be made general. While he had great respect for Pasteur, he could not help believing that he had increased the spread of anthrax by scattering abroad his modified anthrax virus, as, under favorable conditions, this weakened virus might become potent and dangerous. He considered it a fact that there had been more rabies in England since Pasteur's discovery than before; and the same danger existed in the attenuated virus of rabies as in that of anthrax.

Dr. L. McLean of Brooklyn said that there was no such natural disease as bovine scarlatina. If cows contracted the disease, it could only be by inoculation from affected human beings. He did not believe that foot-and-mouth disease was prophylactic of scarlet-fever. There had been but two outbreaks of foot-and-mouth disease in this country, — one in Maine; and one in the vicinity of New York City, extending up the Hudson as far as Poughkeepsie.

Dr. J. Lewis Smith said, "Since the time of Jenner the hope has been awakened that some of the other fatal infectious diseases, and especially scarlet-fever, might be prevented, as small-pox has been, by the substitution of a milder and modified disease, derived from the lower animals. As regards scarlet-fever, two propositions of great interest and importance have arisen: first, is there a disease in the bovine race which is true scarlet-fever, or which communicates genuine scarlet-fever to man? and, second, if there be such a disease, does it produce a mild and modified form of scarlet-fever in man? Many instances have been recorded in the last five or six years in which epidemics of scarlet-fever have arisen from the use of milk furnished by healthy cows, and infected with the scarlatinous germ after the milking; but in the St. Marylebone and Hendon epidemic, occurring two years ago, and described in the *British Medical Journal*, May 20, 1886, the outbreak of scarlet-fever appeared to be clearly traced to diseased cows. Now, the point to which I wish to call attention is this. The sickness of the cows was mild, not appreciably impairing their appetite, nor diminishing their milk, but the disease which the use of the infected milk produced is described as an 'intense outbreak of scarlet-fever.' Instead of a mild disease being propagated from the cow, for which we are looking and hoping, the reverse occurred. A mild form of the disease in the cow produced a severe one in man; so that it appears from the history of this epidemic, that, by inoculating with the bovine scarlatinous virus, we might produce severe and fatal epidemics, instead of a mild and modified form of the disease."

Dr. Stickler closed the discussion by saying, that, if he produced only a slight and harmless attack of scarlatina by his inoculations, he could see no objection to the use of the scarlatinal virus for this purpose; and, when the terrible effects of the unmodified disease were taken into consideration, he thought it of extreme importance that a method of protection should be secured if possible. As to the disease from which the Hendon cows suffered, it had, he thought, been clearly demonstrated that it was nothing else than scarlatina, since it was precisely the same affection as was ordinarily produced in cows by the inoculation of scarlatinal virus from the human subject.

THE BACILLUS OF CANCER. — Dr. Horatio R. Bigelow, in a letter from Berlin to the *Boston Medical and Surgical Journal*, expresses his conviction that Scheurlen has discovered the bacillus of cancer. This discovery is confirmed by S. Guttmann and Stabsartz Schill. In every case of cancer which Scheurlen has examined, he has found the bacillus. Dr. Bigelow believes that there is a bacillus of cancer just as really and absolutely as there is one of consumption. Its morphological characteristics are not yet clearly defined, and there are many other doubts to clear up and questions to answer; but all of this can come only after many months of hard and patient labor. At a recent meeting of the Berlin Society of Internal Medicine this discovery of Scheurlen was discussed. Fraenkel regarded the methods employed by

Scheurlen as defective. From the reports of this meeting it would appear that but few of the leading men of Germany are yet ready to accept Scheurlen's claims as established.

BOOK-REVIEWS.

Lectures on Bacteria. By A. DE BARY. 2d ed. Tr. by Henry E. F. Garnsey and Isaac Bayley Balfour. Oxford, Clarendon Pr. 8°. $5.50.

THIS is an excellent translation of De Bary's 'Vorlesungen ueber Bacterien,' with a considerable number of notes in an appendix. For one who wishes a good readable account of the nature and action of bacteria, not too long or too full of technical details, this moderate-sized and well-arranged volume answers the purpose admirably.

The Children: How to Study Them. By FRANCIS WARNER, M.D. London, Francis Hodgson. 12°.

THIS little volume contains half a dozen lectures, delivered by request of the Froebel Society of London, by Dr. Warner, whose works on the anatomy of movement and on physical expression are widely known. The object of the lectures is to impress upon teachers and parents the necessity and importance of the scientific observation of children. The plea is admirably and emphatically urged. On the practical side there is an attempt to give a number of indications by which the physiological health and growth of children can be observed. Though these are doubtlessly useful, and when made by a skilled observer valuable, yet they are too vaguely stated to be generally applicable. A table of printed questions, with directions as to their use, would be a much safer and more useful compend to put into the hand of the ordinary teacher. Dr. Warner sketches the anatomy of the parts of the body concerned in motion, shows how they are all related to the activity of the brain, and thus become an index of mental strength or weakness, and then describes a series of postures of various parts of the body, and especially of the hand, indicative of various temperaments. He lays stress upon the indications of the nervous type of child with the practical object of teaching such children separately, as we do with the deaf, the blind, and the weak-minded. "Why, then, are the children of slight brain-defect not specially cared for, children tending to become passionate picking up bad habits and practising them, tending to criminality, or, if too feeble for that, to pauperism? . . . Now, my argument is, that we can discover such children and pick them out in a school by definite physical signs; we can point out the children not up to the average, and tending to failure from want of brain-power." This series of lectures adds to the number of indications of the time when we shall have definite knowledge of the physical and mental traits of children by which their healthy education may be guided, and their evil tendencies avoided.

Annual Report of the Geological Survey of Pennsylvania for 1886. Parts I. and II. Harrisburg, Geol. Surv. 8°.

ALTHOUGH Professor Lesley's staff is now quite small, this report adds four volumes to the imposing series already published by the Second Geological Survey of Pennsylvania. Many of these numerous volumes, although possessing a local interest and value as aids in economic developments, are, from the scientific point of view, simply masses of facts awaiting generalization; and it is to be hoped that the long-promised final report which is to co-ordinate these multitudinous data will soon begin to appear.

Only the first two volumes of the report for 1886 have been received. These are crowded with details of the development and production of coal, oil, and gas, but are rather deficient in features of more than local interest not previously published; and, since the data are largely of a statistical nature, even their local value must be diminished by tardy publication.

The first volume contains the report, by Mr. E. V. d'Invilliers, on the re-survey of the Pittsburg coal-region. It is largely a summary, in one volume, of the surveys made a decade since by Professor Stevenson, Mr. White, and others. It is accompanied, however, by a new geological map of south-western Pennsylvania. Special attention is given to the principal commercial coal of the region, — the great Pittsburg bed. Its outcrop is determined horizontally and vertically more accurately than ever before; and the historical and statistical facts bearing upon its development, the structural lines affecting its position for mining; the stratigraphical features of the coal-measure systems above and below it; and the methods most in use for mining and transporting its product to market, — are exhibited in all desirable fulness and detail. It is easy to see that this report must prove of great practical utility to the coal-operators of the region; and the elevations above tide of the outcrop of the Pittsburg coal-bed will be useful to oil and gas prospectors in giving them a basis from which to estimate the depth to be drilled in order to reach the geological horizons of the different oil and gas sands.

This report is supplemented by two important contributions on Pennsylvania bituminous coal mining by Mr. A. N. Humphreys and Mr. Selwyn Taylor, and is also accompanied by a memoir by the eminent and venerable paleo-botanist, Leo Lesquereux, on the character and distribution of paleozoic plants.

The second volume consists chiefly of Mr. Carll's report on the oil and gas regions. The history of development is the most complete yet published, and gives the reader a good general idea of the successive steps by which the petroleum industry has advanced from the primitive skimming of an oil-spring with a piece of bark and the restricted use of the material to medicinal purposes, to the drilling of wells three thousand feet deep, the pumping of oil over mountain and valley to the seaboard, and the flooding of the world with an inexpensive illuminant. The ancient pits or shallow wells which are found all over the oil-region, and which were undoubtedly dug to obtain oil, are discussed at some length; and the conclusion is reached that these early oil operations are due, not to the Indians, or French, or early white settlers, but to some primitive dwellers on the soil, who have long since passed away.

Short chapters on the geographic and topographic distribution of oil and gas, on the structure and stratigraphy of the productive horizons, and on the developments during 1886, are followed by a long and monotonous series of well-records, which constitute the principal part of the report. The volume concludes with a memoir on the chemical composition of natural gas by Professor Phillips, and the extended bibliography of petroleum.

Unfinished Worlds: a Study in Astronomy. By S. H. PARKES. New York, Pott. 12°. $1.50.

THIS book is intended for general readers, especially those in early life, whose ideas of the province and achievements of science are generally in excess of the sober teachings of actual experience. In this we quote from the author, and, while we are ready to agree with him to a large extent, yet we feel that just as the knowledge of Columbus seemed wonderful and awe-inspiring to his crews when he predicted the coming of an eclipse, so to us appear startling the little scraps of information our new instruments are giving us of the constitution of the celestial bodies. The old astronomy busied itself with the movements, the new astronomy with the physical constitution, of the sun, the stars, the planets, and comets. While it is true that for many of us the interest in the old astronomy began to wane, the results already achieved in this new field are so novel that we may be pardoned if we are apt to exaggerate their magnitude. Mr. Parkes's book has for its main purpose the bringing-out clearly of the changing nature of the bodies filling space, and sketches the information we have of nebulæ, stars, the sun, the earth, the planets, and comets. All this is well done. The book closes with a *résumé* of the different cosmic theories.

NOTES AND NEWS.

THE January number of the *Revue Philosophique*, edited by Felix Alcan, contains articles by A. Espinas on the mental evolution of animals, by F. Paulhan on associationalism and psychical synthesis, and by Adam on Pascal and Descartes. Besides this, reviews and *résumés* of new publications are given.

— Prof. J. J. Egli of Zurich, Switzerland, who writes the biennial reports of new researches on geographical names for Wagner's annual report on the progress of geography, publishes a circular letter in which he requests authors and publishers to send him copies, or, when such is not possible, titles, of publications and of notes or papers in journals or books referring to the subject of geo-